EXHIBIT 1

UNITED STATES DISTRICT COURT

DISTRICT OF MASSACHUSETTS

	)	
SCANSOFT, INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 04-10353-PBS
	)	
VOICE SIGNAL	)	
TECHNOLOGIES, INC.,	)	
LAURENCE S. GILLICK,	)	
ROBERT S. ROTH,	)	
JONATHAN P. YAMRON,	)	
and MANFRED G. GRABHERR,	)	
	)	
Defendants.	)	
	)	

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FEB 0 1 2005

BROMBERG & SUNSTEIN

PRESUMED CONFIDENTIAL UNTIL 2/16/05
PURSUANT TO PROTECTIVE ORDER

DEPOSITION OF PETER J. FOSTER, a witness called
by and on behalf of the Defendants, taken pursuant to
the applicable provisions of the Federal Rules of
Civil Procedure, before Dana Ulrich Welch, CSR,
Registered Professional Reporter, and Notary Public,
in and for the Commonwealth of Massachusetts, at the
offices of Choate, Hall & Stewart, 53 State Street,
Boston, Massachusetts, commencing at 10:13 a.m.

Job No.: 2196

COPY

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1   A.   Voice dialing.   There is -- I mean, it's --

2   there's speech recognition connected to it.   I mean,

3   it's not just limited just to voice dialing, but

4   voice dialing in a broad sense.

5   Q.   Okay.   And as of the date that the first of

6   these patents was filed, which is April 13th, 1992,

7   what was the novel aspect of the invention that the

8   three of you had come up with?

9   MR. ASHER: Objection.

10   THE DEPONENT: Am I --

11   BY MS. COLUMBIA:

12   Q.   You're permitted to answer unless your

13   counsel instructs you not to answer, sir.

14   A.   All right.   I mean, there were many.   No

15   one had ever done -- had successfully developed a

16   way to do voice dialing in wireless environments

17   before.

18   So I mean, I truly don't remember them all.

19   I believe they're in the patents, embodied in the

20   patents.   But suffice it to say, no one had ever

21   successfully invented a way to basically safely dial

22   your car phone.

23   Q.   And what was the way that you and Dr.

24   Schalk and Mr. Bareis invented?

1   A.   When you say the way, do you mean like the

2   method that we used to invent it or --

3   Q.   No.   I'm sorry.   You just commented that no

4   one had figured out a way to safely dial your phone.

5   And as I understand it, the three of you did figure

6   out a way to safely dial your phone?

7   A.   Right.

8   Q.   What is it that you figured out; what is

9   that way?

10   A.   Again, there isn't an it; there's many

11 things.   The first -- we came up with a way so that

12 people could and would dial their telephone using,

13 you know, using their voice as opposed to their

14 hands or anything else.

15   Q.   Uh-huh.

16   A.   And it's a great number of pieces to it

17 that are, you know, I mean, I go through some of

18 these things.   It's -- but there's different

19 elements of it that make it successful.   And

20 there's, let's say, I'd call them subinventions that

21 are all part of it, part of the total invention of

22 how you do the voice dialing.

23   Q.   Okay.

24   A.   Examples or counter-examples would be when

1   you dial a regular telephone, you know, you look at

2   it; you pick up the receiver or the hand piece; you

3   look at the buttons; you push them and those kinds

4   of things.

5   Well, up to this point in time, no one had

6   been able to do that in a wireless environment

7   without, you know, without sort of the traditional,

8   manual way to dial. And so we came up with a

9   system, and I'm not trying to be technical in terms

10   of method apparatus application. But I called it an

11   application that would pull together aspects of the

12   recognition, the way people behave with it, aspects

13   of voice feedback, speech synthesis, whether it was

14   real or not, meaning machine generated or actual

15   compressed speech, and other sub -- I'll call them

16   sub-routines, because most of this was software

17   based -- some of it was hardware, but most of it was

18   software, that people would actually interact with

19   successfully.

20   So I mean, there's a lot of little aspects

21   that went into it. But it was basically the first

22   time -- not basically -- it was the first time, and

23   surprised a lot of people that you could make

24   speech, a speech system that would work for voice

Page 23

1   dialing in a wireless environment.

2   Q.   What was your contribution to the overall

3   invention, understanding that it had many

4   subinventions to it.

5   A.   I don't remember the whole -- I'm sure

6   there's various aspects of it. But remembering that

7   this was, you know, 13, 15 years ago. Starting with

8   let's go after this market. Determining the

9   requirements, you know, in advance of the invention.

10   In other words, what are you trying to do. A lot of

11   the human factors; a lot of the telecommunications

12   strategy and overall systems design; the testing,

13   some of the testing for it; what are the -- maybe

14   that's requirements. But you know, when is it   .

15   successful; when is it not successful.

16   Boy, just little bits and pieces. Things

17   as simple as timers; where does one set timers. I

18   had a lot of experience in telecommunications and so

19   brought that expertise to the situation, a lot of

20   experience with phones and switching systems.

21   So I mean, the three of us were, it wasn't

22   you just do this and you just do this and me just do

23   that. I mean, we had primaries. Tom, Dr. Schalk

24   was primarily responsible for the speech

Page 24

1   recognition, but he also contributed heavily and in

2   some cases lead to the -- lead contributor to the

3   human factors. Mr. Bareis also had switching

4   experience from a previous career and

5   telecommunications experience and he was primarily

6   in the hardware development.

7   But we would meet and collaborate on -- on,

8   you know, as a committee on most -- on where these

9   things came together. And actually, critiqued is

10   probably too strong a word, but looked for holes in

11   the areas where someone else had the prime

12   responsibility. So it was a pretty good

13   collaboration.

14   Q. Okay. When did Mr. Bareis join the

15   company?

16   A. I don't remember.

17   Q. I may have asked you that.

18   A. After me.

19   Q. Sorry.

20   A. Yeah.

21   Q. When approximately did the three of you

22   begin this collaborative process which resulted in

23   the invention that's described in this family of

24   patents?

1   A.   I don't really remember.

2   Q.   Do you remember if I -- the first patent

3   application was filed in April of 1992. Can you

4   tell me, we started two years before that, five

5   years before that? I assume it's a number of years

6   to develop this technology, but I may be wrong.

7   A.   Yeah, this invention -- let me answer it

8   this way: We got together with patent counsel and

9   learned about patents because none of us were

10   experts in it. And had to go through, jump through

11   some steps with the patent attorney to determine

12   what inventions were not accomplished prior or, you

13   know, too early in the process. I don't even

14   remember how long that was. I think it was a year.

15   I might be wrong.

16   But we went through things like we had to

17   produce marketing documents to show him of all our

18   products and -- maybe not all of them, but anything

19   relevant, you know, so that we could sort of bound

20   this and determine where we could start with the

21   invention.

22   It was my opinion we had patentable

23   technology of other ilks, other inventions, let's

24   say, that we chose not to patent earlier. So

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1   there's this continuum of what we're doing.

2   But it centers around the inventions that

3   we made that went into the McCaw cellular voice

4   dialing system; that was the trigger that caused us

5   to say, well, this stuff is now getting out. That

6   was a commercial product, you know, something that

7   the average person I think would think is

8   commercial. We sold it. They put it into general

9   use among their wireless customers in Dallas, Texas.

10   Q. Okay.

11   A. So we, you know, we thought we'd patent it.

12   We went back and looked at any number of inventions

13   that we had, figured out the ones that were possible

14   or let's say, the aspects of this that were possible

15   to protect with patent, with a patent law and dealt

16   with those in these patents. And the core of it is,

17   you know, voice dialing in this wireless

18   environment.

19   Q. Okay. And the patent counsel that you

20   referred to, was that Mr. Judson at the time?

21   A. David Judson, yes.

22   Q. Putting aside -- we'll get back to the

23   materials you've collected up for your patent

24   counsel. So putting those aside and focusing

1   A.   Our strategy was to focus on patenting

2 applications of speech rather than algorithms.

3   Q.   Okay. And what do you mean when you talk

4 about patenting applications of speech as the

5 strategy? And if it will help you, you can give me

6 a concrete example.

7   A.   Well, this is a good one, voice dialing 183

8 family. There's a lot of technology and invention

9 that goes into a speech recognition success, rather

10 than just the algorithm. And I felt the industry

11 was too focused on which algorithms were better by

12 two and a half percent. The error rates were

13 generally two percent, so if you were two percent

14 better on two percent.

15   On the other hand, you can greatly improve,

16 make something workable if you can deal with other

17 causes of errors besides just core speech

18 recognition. So it's that stuff that I told our

19 folks was valuable. Not to mention the speech

20 recognition algorithms, yeah, yeah, yeah. But our

21 real crown jewels was how to make it work; said

22 differently, the surround around the recognizer that

23 made people, I mean, ultimately it came to down to

24 an error rate, so you could express it to the

1   technologists in terms of an error rate.

2   If you could do something outside of the

3   speech recognizer that would make the speech

4   recognizer look like it worked better, it worked

5   better, I mean, in application. And it didn't show

6   itself in an algorithm test.

7   So I was trying to capitalize on that work

8   and effort and invention that went into everything

9   else, too, not just the algorithm.

10   Q.   Okay. And applying what you just described

11   as the application to the development of voice

12   dialing at the central switch for cellular service

13   providers, what were the extra challenges faced by

14   moving it, not moving it, but by instead of putting

15   it in the handset, putting the voice dialer at the

16   cellular providers switch?

17   MR. ASHER: Objection.

18   THE DEPONENT: I mean, there were some

19   aspects that were switch-based related and there

20   were some aspects that were application based

21   related. And when I say application, let me

22   back it up. Like collecting digits. That is an

23   application, sort of a sub-application or -- and

24   you have to learn how to collect digits in a

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1   user's desire to use them in a certain way.

2   For example, you can collect credit card

3   digits in one way. If you're collecting a

4   telephone number, you can do it another way.

5   And it's -- this is where what I was describing

6   as the application really comes into play. In a

7   credit card number, there's a check sum. And so

8   if you use the intelligence that's outside of

9   the recognizer or if you use this check sum

10   information, you can greatly improve the

11   recognition, apparent recognition accuracy.

12   BY MS. COLUMBIA:

13   Q. Yeah.

14   A. So in this case, we put a lot of effort and

15   a lot of brain power into how do people in a mobile

16   environment, wireless, handset, you know, how do

17   people interface with the recognizer to make the

18   recognizer work better.

19   Q. Okay.

20   A. A simple example for a nonmobile phone like

21   look at that one, it's a Nortel or a Meridian phone,

22   I think.

23   Q. Meridian, yeah.

24   A. It has a display. Well, you're sitting

Page 117

1   there and you can look at the display for feedback

2   about whether the darn thing knows, in a speech

3   case, whether it's recognizing what you've said to

4   it. You can't do that in a car. I mean, you could,

5   but God help us all.

6   So you know, it's really different how you

7   do dialing in a mobile environment rather than a

8   static environment. And we -- no one knew how to do

9   that --

10   Q. Okay.

11   A. -- at the time. And that's what I was

12   trying to get across to our guys. You know, the

13   scientists all blew that off as that's the easy

14   stuff. The hard stuff is this mathematical. And I

15   used to tell them, you know what, the algorithm is

16   two percent of the product; so get over yourself.

17   That's a quote that they've heard many times. So

18   that's what I mean by the application. It's all

19   this other stuff.

20   Q. So I guess the question that I was asking

21   but I didn't ask very well was before you first

22   approached McCaw, as I understand the chronology we

23   did this morning, understanding we don't have very

24   good date stamps, but you had built a voice dialer

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1   that was attached or inside the NEC phone. You had

2   built a voice dialer for the Italtel phone and for

3   the Uniden phone.

4   What were the application challenges

5   specific to moving, I don't want to say moving

6   because that's probably wrong, but to having the

7   voice dialer at the central switch as opposed to in

8   the handset, which you had done to date?

9   MR. ASHER: Objection.

10   BY MS. COLUMBIA:

11   Q. Well, let me ask, were there challenges

12   associated with voice dialing application at the

13   central switch that were not present in the voice

14   dialing application in the handset or in the

15   cellular phone?

16   A. I'd express it in a different way.

17   Q. Okay.

18   A. There was more to do and more you could do

19   and that's the key.

20   Q. Okay.

21   A. You didn't see tens of thousands of these

22   NEC phones running around. And they didn't meet the

23   fundamental problem. They were a nice algorithm

24   implementation and the application was terrible.

1   People didn't use them. Because of the ability to

2   put it centrally, as opposed to having to replicate

3   the hardware everywhere, you were afforded a cost

4   savings per user that you couldn't even begin to

5   approach in a phone.

6   So we had failed at -- I mean, you know,

7   the thing recognizes digits, big deal. Nobody used

8   it. It was a pain in the rear end. The only people

9   who used it was somebody trying to impress somebody.

10   It wasn't safer because people didn't use it.

11   Once we got into being able to make it a

12   piece of the switch or of the network, you could'

13   spend lots of money on hardware because it got

14   distributed across tens of thousands of customers.

15   So we were able to now really develop something

16   people could use from a cost perspective, which then

17   led to the challenges. Okay?

18   Q. Okay.

19   A. Things like, how did you deal -- how do you

20   effectively deal with noise. And I don't mean

21   steady state noise. I mean, somebody tooting the

22   horn, PJ in the back seat saying, dad, in the middle

23   of me trying to talk to the thing, windshield wipers

24   being turned on, the radio going a little too loud;

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1   I mean that's just one class of things.

2   Another class of things are the timeouts.

3   You couldn't have the -- most people in those days

4   were trying to do speech recognition with a digital

5   signal processor, which is an expensive class of

6   computer, very expensive, even more expensive in

7   terms of its memory system. We had to deal with, I

8   think it was an Intel 8088 -- which was basically a

9   piece, an early, very early PC chip kind of thing --

10   because of the cost.

11   I mean, even then, phones were being given

12   away. People wouldn't spend any more for a

13   peripheral to a phone, even to save their lives,

14   until afterwards. I mean, it's just like today.

15   You go sign up for cellular service, you get a phone

16   for free or something like that. And these things

17   were coming in at $300 retail. You know, that was

18   insane. So nobody -- didn't take off. It was a

19   failure as a commercial product. And as a speech

20   recognizer.

21   You didn't tell people this, but that's

22   what it was. So with -- we could used whatever

23   computer, we could have used a Cray if we wanted to

24   at the central office because the cost was

1   distributed across thousands of people.

2   So then that let us do things like

3   nonstatic timing. And what I mean by that is we had

4   to learn things about how people spoke digits in a

5   digit string and build intelligence around the

6   recognizer to interface with people -- you know,

7   it's a man machine interface -- which nobody knew

8   about, nobody had done.

9   We went out and finally bought a book about

10   how to interface it to -- how to interface this

11   intelligent peripheral to other parts, other

12   systems. And they had sort of Bell standards for

13   land lines and then we had to adapt those to the

14   wireless environment. There's timeout -- and

15   timeouts are a big one, believe it or not, for

16   regular phones. How long you can sit there and not

17   dial anything and the dial tone either stays there

18   or it goes away.

19   Well, it's like, I don't know what it is,

20   30 seconds. Well, you can't have an open microphone

21   for a speak recognizer for 30 seconds in a car;

22   sooner or later, the thing is going to think it

23   heard something, a bump in the road. And especially

24   then, when the technology was very fragile.

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1   CERTIFICATE

2

COMMONWEALTH OF MASSACHUSETTS

3   SUFFOLK, SS

4   I, Dana Ulrich Welch, Registered Professional

5   Reporter and Notary Public in and for the

6   Commonwealth of Massachusetts, do hereby certify:

7   That PETER J. FOSTER, the witness whose

8   deposition is hereinbefore set forth, was duly sworn

9   by me and that such deposition is a true record of

10   my stenotype notes taken in the foregoing matter, to

11   the best of my knowledge, skill and ability.

12   IN WITNESS WHEREOF, I have hereunto set my

13   hand this 28th day of January, 2005.

14

15   *DANA ULRICH WELCH*

                      _____

                      Dana Ulrich Welch, RPR

16   Registered Professional Reporter

17

18

19

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21

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23

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EXHIBIT 2

UNITED STATES DISTRICT COURT

DISTRICT OF MASSACHUSETTS

SCANSOFT, INC.,	)
	)
Plaintiff,	)
	)
v.	)
	)
VOICE SIGNAL	)
TECHNOLOGIES, INC.,	)
LAURENCE S. GILLICK,	)
ROBERT S. ROTH,	)
JONATHAN P. YAMRON,	)
and MANFRED G. GRABHERR,	)
	)
Defendants.	)
	)

PRESUMED CONFIDENTIAL UNTIL 2/18/05
PURSUANT TO PROTECTIVE ORDER

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FEB 03 2005
BROMBERG & SUNSTEIN

DEPOSITION OF THOMAS B. SCHALK, a witness
called by and on behalf of the Defendants, taken
pursuant to the applicable provisions of the Federal
Rules of Civil Procedure, before Dana Ulrich Welch,
CSR, Registered Professional Reporter, and Notary
Public, in and for the Commonwealth of Massachusetts,
at the offices of Choate, Hall & Stewart, 53 State
Street, Boston, Massachusetts, on January 28, 2005,
commencing at 9:18 a.m.

Job No.: 2197

COPY

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1   claim, is it correct that the Uniden phone

2   utilized a speech recognition method for a

3   mobile telecommunications system?

4   MR. SCHECTER: Objection.

5   THE DEPONENT: Can you repeat that?

6   I'm trying to get the question.

7   BY MR. FRANK:

8   Q.   Sure.   Is it correct that the method

9   incorporated in the Uniden system was a speech

10   recognition method for a mobile

11   telecommunications system?

12   MR. SCHECTER: Objection.

13   THE DEPONENT: Not a mobile

14   communications system.   It was an interface

15   to the phone, to the dialing process of the

16   phone.

17   BY MR. FRANK:

18   Q.   What's the distinction that you're

19   making?

20   A.   Well, the phone, and like a destination

21   that you're calling, I mean, that's all part of

22   the telecommunications system.   But this is an

23   interface to the dialer, in the case of the

24   Uniden phone.

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1   best understanding; that's all I can ask for.

2   A.   But if you use different ways of

3   wording things, I can answer the questions

4   better.

5   Q.   Unfortunately, I'm constrained by some

6   legal requirements to ask you some of these

7   questions this way.

8   A.   And I'm not someone who is in a

9   position from a legal standpoint to interpret

10   some of the language.

11   Q.   I'm asking from your perspective, both

12   as the inventor of this patent and as somebody

13   who's in the business. And I'm simply asking

14   for your understanding.

15   A.   Okay. And I'm going to have to answer

16   the questions using terms I am comfortable with

17   and hoping that they match what you're

18   thinking.

19   Q.   Okay. So let me ask whether a method

20   employed in the Uniden product, as described in

21   Schalk Exhibit 4, was a speech recognition

22   method for a mobile communications system?

23   A.   The method employed in the Uniden

24   phone? Method, I'm not sure if you're talking

Page 163

1   about the method of speech recognition, the

2   method associated with the logic of the call

3   flows.

4   Q.   The method of speech recognition.

5   A.   The method of speech recognition is

6   different in the Uniden phone than in a system

7   -- it's not necessarily the same.

8   Q.   And is it correct that the method, the

9   speech recognition method used in the Uniden

10   phone is, in your opinion, not a speech

11   recognition method for a mobile

12   telecommunications system?

13   MR. SCHECTER: Objection.

14   THE DEPONENT: In a general sense -- it

15   depends on how you define it. The speech

16   recognizer in the Uniden phone is designed

17   to recognize speech going through the

18   handset, the audio as its received.

19   You may have situations where you're

20   speaking into a handset where the audio is

21   transmitted to an off-board recognizer, the

22   recognition would be different, details of

23   the algorithm and such.

24   BY MR. FRANK:

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1   intelligence and all that stuff that the user

2   experiences is influenced by the black box.

3   Q.   And what's being described here is a

4   black box that is hooked up in one way or

5   another directly to the central switch?

6   MR. SCHECTER: Objection.

7   THE DEPONENT: Well, I think -- unless

8   -- I think this patent is more about

9   general characteristics in voice activated

10   dialing.   It goes into the some of the

11   components of voice activated dialing,

12   whether it's in the switch or not.

13   BY MR. FRANK:

14   Q.   Well, we'll take it one at a time.

15   A.   Okay.

16   Q.   The patent describes a system that is

17   part speaker-dependent and part

18   speaker-independent; is that correct?

19   A.   I don't know if that's covered in this.

20   I mean, you'd have to point to -- I say that

21   because we started with a speaker-independent

22   system and --

23   Q.   Let me come at this differently.   Did

24   there come a time when Voice Signal decided

1   speaker-independent voice recognition system?

2   MR. SCHECTER: Objection.

3   THE DEPONENT: Actually, in my opinion

4   the algorithms that came about, that were

5   developed, could also be used on a system

6   that was not an off-board application.   The

7   memory requirements turned out to be very,

8   very small.

9 BY MR. FRANK:

10   Q.   So it's your opinion that it was the

11 algorithms developed by your group that made it

12 feasible to have the combined system?

13   MR. SCHECTER: Objection.

14   Mischaracterizes.

15 BY MR. FRANK:

16   Q.   I'm not trying to mischaracterize.

17 Correct me if I'm wrong.

18   A.   We developed a way to extend our

19 speaker-independent algorithm to operate in a

20 speaker-dependent mode.   The memory

21 requirements to represent what we refer to as a

22 template or a representation of something that

23 someone speaks, like a name, the memory

24 requirements for that were so small, the RAM

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1   requirements for an on-board solution, that it

2   was practical to implement that on an on-board,

3   meaning embedded, or off-board.

4   Q.   And do you find that algorithm or that

5   -- do you find that algorithm or that

6   development -- withdrawn.

7   MR FRANK: Would you read the last

8   answer to me so I ask the question in the

9   terms that the last answer was articulated.

10   (The testimony referred to was read by

11   the stenographer.)

12   BY MR. FRANK:

13   Q.   And is that the method that you said

14   earlier was maintained as a secret at Voice

15   Control Systems?

16   A.   Details were never disclosed. But some

17   of the manipulation of the speaker-dependent

18   representations, how you'd manipulate that and

19   do the averaging, was shared with Brite, for

20   example. But how the actual numeric

21   representations were generated, how you got

22   that, was never revealed.

23   Q.   And there's nothing in this patent, the

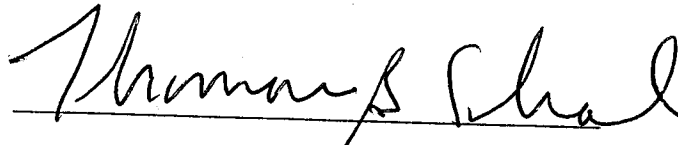24   966 patent, that describes the method that you

1   C E R T I F I C A T E   Page 244

2   I, THOMAS B. SCHALK, do hereby certify

3   that I have read the foregoing transcript of my

4   testimony, given on January 28, 2005, and I

5   further certify that said transcript is a true

6   and accurate record of said testimony (with the

7   exception of the corrections listed below):

8   Page   Line   Correction

9   NONE TBS

10

11

12

13

14   Dated at April   , this 20th

15   day of _____, 2005.

16

17   _____
          THOMAS B. SCHALK

18

      SIGNED UNDER THE PAINS AND PENALTIES OF PERJURY

19

20

21   duw

22

23

24